

**MID-TERM ASSESSMENT OF USAID'S SUPPORT FOR ZAMBIA'S EDUCATION  
MANAGEMENT INFORMATION SYSTEM (EMIS) AND RELATED ACTIVITIES**

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EMIS and Related Activities

American Institutes for Research

USAID/Zambia

SO2: Improved quality of basic education for more school-aged children

IR 2.3: Improved information for education decision making processes

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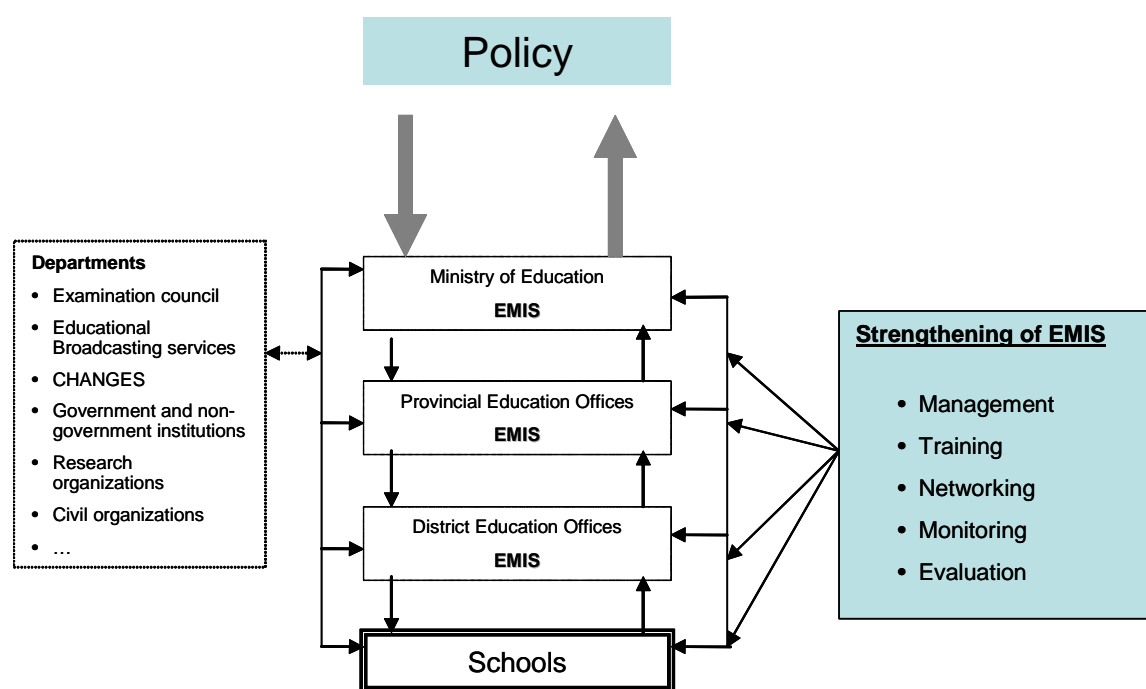
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Final



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20 February, 2003

## Acronyms

|         |  |
|---------|--|
| WCEFA   | World Conference on Education for All  |
| EFA     | Education for all  |
| ADEA    | Association for Development of Education in Africa   |
| WGES    | Working Group on Education Statistics  |
| NESIS   | National Educational Statistics Information Systems  |
| MOE     | Ministry of Education  |
| EMIS    | Education Management Information Systems   |
| AIR     | American Institute for Research  |
| ECZ     | Examination Council of Zambia  |
| CHANGES | Communities Supporting Health, HIV/AIDS, Nutrition, Gender and Equity Education in Schools |
| USAID   | United States Agency for International Development   |
| EBS     | Educational Broadcasting Services  |
| COP     | Chief of Party   |
| AED     | Academy for Educational Development  |
| DEO     | District Education Office  |
| CSMC    | Community Sensitization and mobilization Campaign  |
| GRZ     | Government of Republic of Zambia   |
| BESSIP  | Basic Education Sub-Sector Investment Program  |
| IRI     | Interactive Radio Instructions   |

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# **USAID's Support for Zambia's Education Management Information System (EMIS) and Related Activities**

## **Mid-Term Assessment Report**

### **Executive Summary**

The government of the Republic of Zambia is committed to the reform and improvement of its education system, in collaboration with various stakeholders including funding agencies. The Basic Education Sub-Sector Investment Program (BESSIP) started in 1999 and will end in 2006. It is funded by the government, USAID and other cooperating agencies. The main objective of this program is to assist Zambia in approaching the improvement of the education system in an integrated manner.

The Education Management Information System (EMIS) program is a sub-program of the BESSIP. Its objective is to build and strengthen capacity in the production and use of educational information for planning, policy formulation and development. The American Institute for Research (AIR) was contracted to manage and implement the EMIS program. The Chief of Party (COP) is responsible for the management and implementation process. AIR has further contracted AED to develop the technical component of the program.

### **Objectives of EMIS**

The objectives of EMIS, according to the contract agreement are:

To improve the capabilities of the ministry to collect, organize, process, store, share and disseminate educational information

To establish a platform for the ministry to access information at all administration units and levels

### **The Assessment Team**

AIR requested ADEA, to carry out a mid-term assessment of the EMIS program. The team was composed of two members from the WGES/NESIS and two members from Zambia, one a former head of the planning directorate education officer and the other a university lecturer.

## **Objectives of the Assessment**

To assess progress in the management and implementation of the EMIS program in the pilot provinces (Southern and Eastern)

To assess the value of continued support for implementation in relation to the achievement of desired goals/objectives

To assess whether the EMIS program is contributing to the strengthening of related activities such as ECZ, CHANGES, EBS, etc.

## **Limitations**

Time was the major constraint. The assessment was conducted within five days. The team was not able to meet as a team, to think through and develop data collection instruments before the first interview.

## **Methodology**

Interviews were used as a major assessment instrument. A cross-section of stakeholders was interviewed either individually or in groups. The team also managed to review some literature. Some of the documents reviewed were: needs assessment Reports, contract agreement and the inception report.

## **Findings**

The program management and implementation are on course and the set goals and objectives are likely to be achieved.

The deployment of hardware in the selected provinces and districts was completed. The training on the use of computers strengthens the work of EMIS in the building of capacity, to organize and disseminate information.

There is active collaboration between the EMIS program and related activities at the ECZ, EBS, and CHANGES

The technical component of the EMIS being developed and is functional. Some reports have already been produced. The software is however still complicated for the current level of available human resources. There is urgent need to provide higher level technical training to ensure continuity and ownership of the program.

## **Recommendations**

The training of personnel at various levels is imperative to ensure continuity of the EMIS program beyond the two years contract period.

The Chief of Party and the AED consultant should be under studied or shadowed, through some bonding mechanism to build capacity at local level.

EMIS should promote the culture of using and disseminating educational information for planning, policy making and management of the education system

# **USAID's Support for Zambia's Education Management Information System (EMIS) and Related Activities**

## **Mid-Term Assessment Report**

### **Background**

The first school in Zambia, was opened in 1883. The provision of education, then, was mainly the responsibility of the Christian missionaries. Their main goal was to spread the word of God through education. The focus of their activities was therefore the achievement of the three R's i.e. Reading, Writing and Arithmetic.

At independence in 1964 Zambia expanded its education system. The focus then was mainly on secondary and university education in line with world trends. Although Zambia remained focused on its domestic goals, it was greatly influenced by world trends over the years. In 1990 at the Jomtien World Conference on Education For All (WCEFA), the world focus was shifted from higher education to Basic Education and Zambia was signatory to the agreement. This conference also declared the period 1990 - 1999, the decade for Education For All (EFA). Many strategies were put in place at country level to achieve the EFA goals.

In 1996 the EFA Mid-decade Review Conference was held in Johannesburg. It was observed at that conference that many countries did not have any statistical data upon which the assessment could be made. A few countries had some data, this data was however incomplete and characterized by gaps and inconsistencies. It was decided then, that all the countries of Africa, should develop and strengthen their capacity in data collection, processing and use, as a priority in order for them to participate fully in the development of their education systems and monitoring of their national EFA programs.

The Association for the Development of Education in Africa (ADEA) was tasked to build this capacity, through its Working Group on Educational Statistics (WGES). The WGES took up the responsibility, through its operational arm, the National Educational Statistical Information Systems (NESIS). NESIS took up the challenge and contributed to development the eighteen EFA indicators, upon which the assessment, was to be based. NESIS further organized a conference for all Sub-Saharan African countries in Nyanga, Zimbabwe, in 1999,



to develop the EFA 2000 Assessment Country reports. The pivotal role of the educational statistical information systems as a tool for the development and assessment of education was enhanced.

The World Conference to assess progress on the EFA decade was held in Dakar, Senegal, in 2000. The conference agreed that the goals of the Jomtien Declaration had not been fully achieved. The decade for the achievement of these goals, was extended to 2015. Six EFA goals were set, and all the countries of the world, have to work towards their achievement. The EFA goals were:

The mid-decade assessment of the extended EFA decade will be done in 2005.

Zambia like many other countries in the region is faced with the challenges of: achieving the EFA goals, addressing and mitigating the impact of the HIV/AIDS pandemic on education, providing infrastructure, financial and human resources to achieve access for all and enhance the quality of education. As already indicated, in order to achieve the above there is need to develop a robust EMIS. The development of a strong Education Management Information System within the Ministry of Education (MOE), is the basis for assessment of progress and the achievement of EFA and other national goals.

## **Set Objectives of building EMIS in Zambia**

The main objective of the EMIS program are:

- to improve capabilities of the MOE to collect, organize, process, store, share, and disseminate education information for informed planning and management of education at all levels.
- to establish an EMIS platform that provides the MOE at all levels with access to that information and
- to establish and enable the MOE to use simulations and modeling systems, based on real, current EMIS data, to plan and to project needs and resource requirements within the MOE

- to collaborate with the Ministry of Education and the Examinations Council of Zambia to enhance Zambia's assessment of learning outcomes through its initiative on competency testing.

## Objectives of the mid-term assessment

Within the framework of the overall objectives of reviving the EMIS center of the Ministry of Education, the objectives of this mid-term assessment are to

1. assess the progress made in one year of the project implementation
2. how well can the project be continued in the coming year of the project implementation. In other words, what improvements can be made, or alternatively what problems can be corrected (if any) in order for the project to be efficiently implemented in the second half of the implementation period including lessons to be learned.

## Terms of Reference

The terms of reference for this mid-term assessment attempt to find answers around the terms of reference as drawn by the American Institute for Research (AIR). The six questions, as stated in the terms of reference drawn by AIR are given below. However, the team is not limited to these questions alone for the assessment of the intervention made by AIR in Zambia to build the EMIS unit within the Ministry of Education. In their words: *The assessment must address the following major questions and may address other questions that it deems to be of interest or importance:*

- a) What progress and accomplishments can be attributed to the program's efforts to date?*
- b) How and how well will continued implementation during the program's second year contribute to achievement of desired outcome?*
- c) What are the program's strengths and weaknesses?*
- d) How can the program be strengthened?*
- e) Are the program's goals and objectives suitable and achievable within the period of the contract?*
- f) Are there suitable activities or tasks that could usefully contribute to the strengthening of the EMIS and the efforts of the Examinations Council of Zambia after the program's scheduled completion in November 2003.*

## Methods and Procedures used in the Assessment

*Interviews:* Interviews were conducted with the following stakeholders of EMIS: CHANGES, Examinations Council of Zambia, (ECZ), Educational Broadcasting Services (EBS), and USAID. Interviews were also conducted with primary beneficiaries of EMIS, that is the District Education Officers from Southern and Eastern Provinces. The evaluation team also conducted interviews with the professional and management staff of the MOE Directorate of Planning and Information who are the main implementers of the EMIS program. Finally the evaluation team conducted an interview with the Chief of Party for EMIS. The evaluation team met and prepared some interview checklists for the interviews some of which were more structured while others listed a few issues for follow-up. These were group interviews except for the planning directorate who was not available for EMIS group interviews. However, we interviewed him alone a day later than was scheduled. The structured checklists used by evaluators are provided in Appendix I

*Document Review:* The team reviewed a number of documents on the formulation of EMIS, the current status of EMIS and also some data collection instruments used by EMIS.

### Limitations:

The assessment was conducted within 5 days and this limited the number of stakeholders the team could meet. The evaluation team did not have time to meet, think through and prepare their data collection instruments as a team before their first interview. Ideally, the team should have interviewed other users of information from EMIS, such as the other units of the ministry such as the directorate of standards and evaluation, non-governmental organizations (NGOs), women's groups and other interest groups such as Parents Teachers Associations (PTA's) and Communities. Due to limited time, the evaluation team was unable to visit any one district to assess the implementation of the program on site.

- The assessment was conducted at the time when the training program of district education officers had just begun. As a result the team could not see the project fully functioning at all levels. The team was not able to assess the flow of information to and from districts.

- The assessment began at the time the ministry was preparing for Strategic Plan Meetings, with various cooperating agencies. We could not meet with the permanent secretary to get an idea of the level of top management for building EMIS.
- The ministry is undergoing re-restructuring and there are many new employed personnel in EMIS who do not have experience in educational information systems. They were not comfortable to answer some key questions we were asking.

### **Program Administration and Accomplishment of Tasks.**

The Chief of Party (COP) is overall responsible for the management and implementation of the EMIS program. The AED consultant is responsible for the technical aspects of the program. The EMIS program has been divided into five operational tasks. The implementation and completion of these tasks are the basis for measuring the success of the program. The overall development and implementation of the program will be in close collaboration with the MOE and the contractor (AIR), using the Education Automated Statistical Information System Toolkit (ED\*ASSIT).

**Task 1- EMIS:** The main objective of this task is to improve the capabilities of the ministry in handling collecting, processing and use of information for informed planning and management of the education system. Much progress has been achieved in the areas of collection, processing and storage of data. The sharing and dissemination of information is still to be refined, because it is related to other components, such as the training of District Education Officers (DEO's) and other information producers and users. Capacity for publication, dissemination and sharing of information has been reached at a technical level and any delays may be on account of administrative issues. The training of the officers to handle the program is going on smoothly. It was noted that the functional aspect of the project is generally on course and should be completed within the set time. The implementation plan was divided into activities. According to the Third Quarter report, the first task, EMIS, was divided into eleven activities. Out of the eleven activities seven have been completed within the time set.

Activity 2 was related to the import of data, from historical data records into the ED\*ASSIT. This has not been done. It was decided to leave the data where it currently resides because it is in a processed state and can be used when necessary without further processing.

Activity 10 on creating stronger links between ED\*ASSIST and support agencies has not yet been completed. Discussions are in progress in search of the best strategies for accomplishing the task.

Activity 11 on completing information organization and cleaning is partially complete only at the technical level. Instruments for dissemination of data are complete but the dissemination exercise has not started

**Task 2- Capacity Building:** This is a continuous component of the project that cuts across all the elements of the project, seeking to foster ownership and create awareness of the importance and crucial role of strong capacity in the management of the education system. Significant progress has also been made in relation to what was planned and there is additional training planned for year two.

The second task on Capacity Building was also divided into eleven activities. Activity 3 on providing information technology in MOE in headquarters has been completed.

In activity 4, the first batch of equipment has been provided in the two provinces and 19 districts. The balance of the computers are being used for training and will be distributed in due course.

Activities 7 and 9 related to training of various staff members at headquarters have not yet been done because the staffing situation has not yet stabilized because of the restructuring program within the MOE.

**Task 3 - Assessment:** AIR and the Examinations council of Zambia are cooperating in the development of competency based testing as a means of learning achievement, process at school level. Although the consultant was able to visit Zambia briefly the project was largely conducted through e-mail correspondences. It is anticipated that capacity in the field of

assessment will enhance personnel skills and knowledge in item writing, and analysis. A need to establish a link with other experienced institutions is pointed out to be useful.

There is only one activity in task 3 on assessment in (EBS) centers. The activity is related to building capacity at ECZ. It has been partially completed as the planned workshop has not yet been conducted.

**Task 4 - Community Data Collection and Use:** This is an area where great collaboration has to be initiated between EMIS on the one hand, CHANGES and EBS' Interactive Radio Instruction, (IRI) programs on the other. The collection of core regular data needs on yearly basis by CHANGES and EBS will have to be negotiated with EMIS for inclusion in the annual questionnaire as the questionnaire is already over loaded. This is because, EMIS has achieved greater capacity and administrative mechanisms in the handling and processing of data. On the other hand, EMIS will have to make use of data collected by CHANGES, EBS and other organizations and institutions that collect and compile reports on education related information as regards community information until a stage is reached, that EMIS can organize data collection and information utilization at community level. Discussions between EMIS and the other parties are in progress to come up with what is workable.

The three activities in Task 4 on Community Data Collection have not yet been done. Discussion and arrangements for completion are at an advanced stage.

**Task 5-MOE and USAID Monitoring Requirements:** The main aim of this task is to inform the MOE and USAID on progress made. It is important for the MOE and USAID to know whether objectives are being achieved, deadlines met etc. Communication on the state of the program is maintained through the submission of various reports, stipulated in the contract.

These reports have been submitted on a quarterly basis as required. For Task 5 all the three activities, production of quarterly reports, were completed on time.

## **The EMIS Program in Zambia**

The EMIS program is working in collaboration, with other institutions, which are likely to benefit from its functions and effectiveness. The first institution is the Communities

Supporting Health, HIV/AIDS, Nutrition, Gender and Equity Education in Schools (CHANGES). This project seeks to improve the quality of education through research and pilot testing of innovative approaches. The project is being implemented in selected provinces and districts. Some of their activities include conducting baseline data surveys, on the health of children, and providing micronutrients and de-worming pills to primary school pupils in selected schools of Eastern province. The Community Sensitization and mobilization Campaign (CSMC) uses theatre to facilitate community awareness on issues related to increasing the enrolment and retention of girls at school; in some districts of Southern province.

### ***Rationale of EMIS in Zambia***

The launching of the EMIS program was based on the needs of the MOE.

First the ministry did not have an effective, and efficient system to collect, organize, process, share and disseminate information for informed planning and management of education at all levels.

Secondly some of the information within the MOE was not fully computerized and is used to provide unit-specific information.

Thirdly the MOE did not have the capacity to provide complete information, nor could they eliminate the many information gaps within and between MOE units. The information was located at the central level and was not feeding into the system at local level.

Fourthly the absence of a uniform database to use at a central processing unit created a significant duplication of effort in data collection and storage which causes inconsistencies in data reporting.

Fifthly, although a fair number of computers were available in the planning directorate, the number of trained personnel was inadequate to use the equipment effectively. Thus there was a need to enhance the skills base of the ministry personnel.

EMIS is a unit within the Ministry of Education responsible for organizing, collecting, processing, analyzing, and distributing of information needed by planners, decision makers, researchers, and other national and international organizations for promotion of educational development of a country. It is responsible for the promotion of informed decision making and sound planning. It is responsible for developing information use and plays a key role in providing educational information services.

The EMIS is a unit of the Ministry of Education responsible for organizing, collecting, processing, analyzing, and distributing information needed by planners, decision makers, researchers and other national and international organizations for the promotion of educational development in the country. It is responsible for the promotion of informed decision making and sound planning. It is responsible for developing information use and plays a key role in providing educational information services. The EMIS unit in the ministry is also expected to bring together, depending on availability of human resources, information from primary and secondary, for the development of the country.

The development of the EMIS program is being done through a contractual arrangement between the USAID/GRZ, through the Ministry of Education and the American Institute for Research (AIR). In the agreement AIR will provide technical assistance to the MOE, to develop, pilot, improve and implement an Education Management Information System. AIR will further develop a plan to enable the MOE to analyze, manage and use timely data/information to make decisions at all levels.

The Examinations Council of Zambia's (ECZ) core business is to conduct examinations for grades 7, 9 and 12 and some teacher training Institutions. AIR is contracted to provide technical assistance through consultancy services, to ECZ, for the development of capacity in developing and using competency tests. Enhanced capacity in competency testing will assist ECZ in providing alternative assessment procedures. This was targeted at the grade 4 level. The ECZ is also running a national assessment project at grade 4, to measure the learning achievement of children at this level. It is also engaged in the development of competency based testing in mathematics and English, to improve literacy and numeracy at grade four as well as in IRI centers.



## ***Objectives of EMIS***

The main objectives of EMIS are:

To improve capabilities of the MOE to collect, organize, process, store, share, and disseminate education information for informed planning and management of education at all levels

To establish an EMIS platform that provides the MOE at all levels with access to that information, to establish and enable the ministry to use simulations and modeling systems based on current EMIS data, to plan and project needs and resource requirements within the MOE based on various best/worst case scenarios in the future

AIR is tasked to collaborate with the Examinations Council of Zambia to enhance Zambia's assessment of learning outcomes through its initiatives on competency testing.

The EMIS program in Zambia should be viewed in the larger context of the Basic Education Sub-Sector Investment Program (BESSIP). This program was launched in 1999. Its main objectives were to improve the quality of education through increased access, enrolment rates, retention and pupils achievement. EMIS is therefore part of the wider response to the demand for accurate, reliable and relevant information to enhance educational planning and inform the policy formulation process.

The second institution is the Education Broadcasting Services (EBS). Through the use of the Interactive Radio Instruction (IRI) the EBS targets all the vulnerable school age children who may not have access to formal schooling.

## **Working procedures of EMIS**

It is in this wider context that the team attempted to look at the mid-term assessment of formative review of the educational management system of Zambia. The nature of the job in EMIS dictates the following established working procedures:

- Data collection

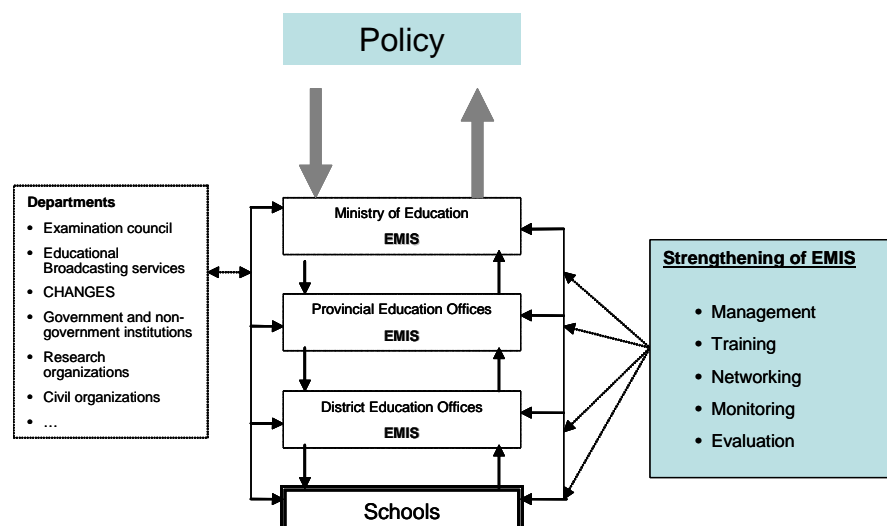
- Data processing
- Data Analysis
- Publication and distribution
- Feedback
- Information services

Each of the above points involves a lot of work. We do not intend to go through these steps in detail in this report. However, it is important to point out that they are all equally important elements that need due attention when building EMIS, within the Ministry.

### **Overall Management and Training:**

In addition to the above working procedures or steps, the EMIS management has to oversee and manage the work flow from the center (policy makers, and top decision makers including EMIS) to schools through provinces and districts as well as the feedback from schools. The diagram below raises important issues EMIS management needs to pay attention to:

- a. The flow of information, guidelines, and demand from the center to schools and flow back of feedback from schools and the utilization of information and feedback at each level of administrative units.
- b. The importance of collaboration between EMIS and users of information. It is a two way relationship based on ‘give what you have (that they don’t have) and take what they have (and you don’t have) and avoid duplication of work.
- c. A strong EMIS can be established when the overall management, continuous training of EMIS personnel, constant monitoring of activities, and periodic evaluation of the system is in-built into the system and carried out routinely. When the networking (exchange of information, guidelines and mutual assistance in training) between schools, districts, provinces and the center is strengthened.



Our job is to relate what has been done in the past year with what is normally required to be accomplished in an effort to set up a management information system for education and identify gaps that could be attended to in the remaining contract period. A considerable amount of work has been done related to the working procedure given above already. We will take these achievements one by one below. It is important to note that setting up a system like this in one or two years is a difficult task. It takes several years of investment, in terms of human and material resources, to shape and arrive at a functioning system.

...

**Data collection:** There are three regular questionnaires revised, updated, published and administered for school level data collection. This was the first step taken in EMIS for the revival of a system that was quiet for sometime. The 2002 instruments of data collection are already administered and processed. The 2003 questionnaires have been distributed to schools. The returns are expected in May. Data entry for the year 2002 is complete and reports were prepared. These achievements in one year are great for a reviving system like the one under study.

Some observations on the annual questionnaires are discussed below.

These three questionnaires try to collect a lot of information needed by decision makers and planners. These data instruments are prepared and distributed by the central office of the ministry planning directorate specifically EMIS. It is

centrally administered and distributed to schools through provinces and districts. The instruments are pre-tested in a way by discussing the questions in the instruments by the

**Table 1**

| Questionnaires                         | No. of pages |
|--|--------------|
| 1. Basic schools (1-9) annual returns; | 26           |
| 2. Secondary schools annual returns;   | 27           |
| 3. Community school annual returns;    | 14           |
| Total                                  | 67           |

provinces and the districts in a workshop type setting. All stakeholders had an opportunity to comment on the draft instrument, before it was finalized and published. The returns were 96% in 2001 and 98% in 2002, thus meeting the deadline set by the ministry. The processing is done using software developed by Academy for Educational Development(AED). The role of the provinces and districts is to monitor the distribution and collection of the instruments to make sure that the deadline is met.

### **Observations about the annual data collection instruments**

1. The data collection instruments are too large for a start. Such a large instrument of data collection is difficult to manage especially at this time of the revival of the EMIS unit and the restructuring program. Ways and means of keeping the questionnaire down will have to be found so that it can be reduced to a manageable size.
2. The instruments are sent to schools for data collection. There are data elements included in the instruments for the collection of fixed assets such as buildings. It is not only costly to collect such information on annual basis but also not necessary to collect such information yearly. Since, the data collection instruments are subject to change every year, or every two years. It is useful to review these instruments at annual or bi-annual training workshops, in order to have a wide spectrum of stakeholders participating in the modification of the data elements included in the instruments. Modification can also be necessitated when the policy body so decides to collect additional information needed for policy formulation. This means that the data entry templates and report generation formats have to be re-designed to capture additional information.
3. Collaboration with other units in data collection can only be accommodated to the degree that it does not increase the size of the already big questionnaire. EMIS has to see to it and balance between the human resources available in EMIS, with the amount of work planned, and limit the requirements from the collaborating institutions to the basic minimum required yearly.
4. The basic source of information comes from schools. Hence, schools are basic targets of EMIS functions and further development. This has to be done by creating awareness and engaging them in school level planning and programming school activities, school level research work, monitoring school activities, and encouraging them in periodic evaluation of the school work.

5. When annual data collection questionnaires get to schools, the schools need a reference data document, such as the school abstract, from which they can fill the required information. In the absence of such a document, no reliable data can be expected from schools. Therefore, there is a need for the revival of the School Management, Records Management System in Zambia.

**Data processing: EMIS unit of the ministry does Data processing centrally.** The software used for data capture is called ED\*Assist, developed by Academy of Educational Development (AED). The captured data is stored in ACCESS software package. This software package is preferred, by many countries for its capability of handling relational database. This software has three sub-modules, which can be combined or alternatively used. They have three different but related purposes:

*QTS* - Questionnaire Tracking System used to monitor the reporting status of schools and can be used to identify non-reporting schools from those that have reported. Hence, schools that have not reported can be filtered and printed for follow up. Once the missing school is identified, it is added to the completed school records. Therefore, it is very useful at all administrative levels especially district level for monitoring school returns.

*IDEA* - Integrated Data Entry and Application module is used for entering data and run some analytical tables. This module is used to enter data from school returns to the ACCESS database. It contains data entry templates, based on the questionnaire layout, to capture data, after which data cleaning is done and made ready for report generation.

*DDM* - Data Dissemination Module is used for report generation. This module uses the database created above to generate reports according to users- needs. Different users need different reports. In practice there is no limit to the number of reports needed as this depends very much on the number of users demanding information which in turn depends on the level of awareness about the importance of information. The minimum number of reports - expected should cover all information contained on the annual questionnaire used, for example to prepare the annual statistical abstract.

The task performed so far includes converting trend data of core elements to a current database. A number of statistical reports have been produced already: Education Statistics Bulletin 2001, and Education Statistics Bulletin 2002. We have got the impression that these data elements and indicators can continue to be produced, published and distributed to users.

The software used to store data is called ACCESS, and Ed\*assist is developed using ACCESS programming.

This necessitates that the capacity within EMIS has to be strengthened both to modify the structure and data capturing templates and reporting generating queries as well as modifying the program to meet changes made on data collection instruments. In particular

1. The capacity within EMIS Zambia to write computer programs in access will have to be planned now so that future program development and maintenance is ensured.
2. Basics of relational database: creating tables, joining tables, modifying ACCESS database programs and modules to meet changes on data collection instruments.
3. Report generating; Query building and form design
4. Copies of the three sub-modules described above will have to be installed and distributed to provinces and districts for use at that level. Moreover, these modules, like other computer programs have to be modified and enhanced in line with developments in the Zambian education system.

**Analysis:** Some analysis has been done regarding basic indicators. These include, net enrolment rates, apparent intake rates, net intake rates, repetition rates, dropout rates, retention rates, pupil-teacher ratios, progression trends, performance indicators. This is a basic achievement for a reviving system. However, data analysis needs be taken a little further ahead to cover all core indicators of the education systems- performance including EFA indicators.

1. Prepare indicators report on a regular basis. This is a review report on findings tuned to the needs and requirements of policy makers and planners, which highlight noted achievements to what the plan and policy document foresees to achieve. A more in-depth analysis of existing data should be planned for use by the ministry.
2. An in-house training of analytical capacity of EMIS personnel at various levels of administrative units is organized by central EMIS, which should later be extended to provincial and lower levels.
3. An efficient use of analytical tools, such as basic and advanced Excel, GIS, SPSS, should be utilized for analytical purposes.

**Publication:** The last publication of statistical abstract on education was in 1995. After AIR and AED came into picture, there are basic statistical indicators reports printed for the last four years. The problem of national population figures holds them back from publishing the

final report. Hopefully as soon as this issue is settled, the printouts will be published and distributed to all stakeholders. The most important part of the stakeholders are the departments in the ministry, provinces, districts and schools. However, the output should be targeted to all other users of educational information.

The printouts contain statistical tables on teachers, pupils, schools and expenditure. More effort should be made to make the annual abstract more comprehensive by including more information contained in the annual data collection instruments and published on regular basis. If it is not published, it is not done!

**Distribution:** Distribution is basically a way of reaching the users of educational information. This include the provinces, districts, schools, decision makers and planners of the ministry of education, other ministries, government and non-government institution(including students and teachers), research organizations, national and international organizations, private organizations and individuals. The best practices are to make a list of users from time to time and include them in the mailing list to regularly update the information they need.

Connect the departments and sections within ministry and arrange for information sharing within ministry through local and wide area network facilities. EMIS products such as the school database, annual abstract and indicators reports and other necessary information can be included in this.

The aim is to make a maximum use of educational information for development purposes. The other method of reaching many users is to design a web page, which contains up to date and timely information for use.

**Information services:** The use of information is mainly confined within the ministry of education. An enquiry format is used to request for information. The user fills the request form and submits it to EMIS unit for compilation of the required data. The extent of external users is not known mainly because there was a gap in information services and there was no tradition of keeping record of users in EMIS. It is one other function of EMIS to provide information services to policy makers, planners, decisions makers, researchers and all other users.

Use indicators' report should indicate the changes made, pointing out the policy expectations comparing and analyzing the achievements made.

Therefore, this wing of the EMIS function has to be developed to a level of communicating information, achievements, and changes made, by taking any opportunity available, in order to be able to give information services. EMIS has to have a clean data pool stored from which analysis can be fine tuned to the needs of the users. The aim of such services is to impart information as needed in such a way that it creates impact among users and creates more demand and utilization. The role of central EMIS is to create such a venue and train subordinate tiers to provide similar services. Such services can be done through methods such as workshop presentations, briefings, meetings, website development, and other possible means of reaching the user.

**Networking:** The central offices are networked and access to email facilities is now possible within MoE. The provinces and districts are planned for this year. Computers are in all provinces and districts. It is expected that this process will be completed by the end of the of the contract period which is November 2003.

**Maintenance:** Maintenance is an area to be addressed soon. For the time being, maintenance and trouble shooting work can be contracted out to a local vendor. However, as a long run solution, EMIS staff has to be trained both in hardware and software maintenance and troubleshooting training.

**Documentation:** documentation is one of the important functions of EMIS but often forgotten, both electronic and hard copies of statistical printouts reports should be kept in order to efficiently facilitate information services.

**Inventory:** inventory of hardware, software and accessories be kept for future use and maintenance (eg. Upgrading) of the system. A good practice is to develop a computer program to monitor the inventory of goods and accessories including statistical publications, reports and other useful materials.

**Personnel requirements:** There are 10 employees working in EMIS head office in MoE. These are six professionals and 4 data entry workers. The provinces have a planner, a



statistician, and data entry clerk. The districts have a statistician and a data entry clerk. The ministry is under going re-structuring. There are new people in EMIS and some posts are not filled yet. However, the human resources availability, both in quantity and quality will improve after the restructuring when all posts are filled.

Whatever effort is made to hire EMIS staff, it may not be possible to get all the necessary staff. This means,

1. The available staff has to be assigned in more than one type of function within EMIS. The assignment should be done taking into account personal 'interest' as much as possible.
2. The management has to ensure that a 'team spirit' is developed and maintained. The spirit of working together, learning from each other at all levels.

**Training<sup>[1]</sup>:** Computer literacy training has started. The training is on-going. A more

advanced and major training in various areas of specialization in EMIS is planned. These are: Basics of relational database, computer programming, Access programming, statistical analysis and geographic information systems. The training on core software package used, Access, is yet to be planned.

| Core training needs         |   |   |  |
|-----------------------------|---|---|--|
| Area of training            | Some of training skills needed  | Participants  |  |
| EMIS - Management           | Overall management skills; information systems; knowledge of commonly used software packages.         | Emis management level staff at all levels   |  |
| Survey administration       | Design of questionnaire, pretesting, publication and distribution, follow up; data cleaning,          | personnel assigned in instrument desing and administration  |  |
| Data processing             | Access Programming(computer code writing); query design, and related software packages used in EMIS   | Programmers, assistant programmers and operation managers   |  |
| Data analysis               | Analytical skills tuned to policy and planning requirements including geographic information systems. | Personnel assigned for data analysis and responsible for information services                                 |  |
| Publication and distributin | Publication design  | Can be delegated fo publishing firms  |  |
| Networking                  | Internet installation, maintenance and training services  | Personnel assigned for installation and training of internet services   |  |
| Maintenace                  | Hardware, software maintenance and troubleshooting  | Personnel assigned for maintenance; General maintenance awareness training can be given to all EMIS personnel |  |

## Monitoring and

**evaluation:** an in built monitoring and evaluation system is not yet established as this is the beginning of the revival of a program that has been halted for some years. Monitoring of activities in EMIS and periodic evaluation according to plan is necessary within EMIS to strengthen the functions of EMIS. Each activity has to be monitored according to the deadline set in the plan.

## **The question of Sustainability**

Sustainability is a major concern for any project to survive beyond the initial pilot stage. If the EMIS project has to survive beyond the two years contract period, there has to be built-in mechanism within the project. Some good projects have been known to deteriorate rapidly and lose their impact because sustainability issues had not received due care and consideration right from the beginning.

- In order to achieve sustainability in the EMIS center in Zambia, the intervening project needs to build technical and management capacity at the national level. These can be achieved by providing adequate levels of material and human resources. The project should survive on the usual budget allocation and current management structures of the ministry of education.
- High level technical and management training for personnel within the project is imperative for a smooth transition and long term survival of the program.
- Institutionalizing the project within all the structures of the ministry of education
- The quality control, element of the project should be brought closer to the point of operation currently. Back-up support for the project is currently in Washington. In Zambia the AED consultant is running the program single handed. When he goes there will be no continuity. A bonding mechanism such as shadowing or intensive training for local personnel should be put in place to ensure further development. Efforts should be made to provide the EMIS local team with the source code for the ED\*ASSIST software package. This is important so that Zambia can adapt the program to suit local conditions and to be in full control of the management and implementation of the program.
- The maintenance of hardware equipment is also very important. Reliable local vendor companies should be identified to maintain the equipment. A system of tracking the equipment and keeping up to date records should also be instituted to prevent losses.

## **Summary of findings**

The program has accomplished most of the planned activities with the exception of developing simulation model which was taken out of the planned activities and then put back at some stage. These activities are

- the procurement of hardware and software,

- the training of EMIS personnel at all levels,
- the networking of different departments of the ministry,
- review of the annual instrument of data collection and its administration,
- the adaptation of the data entry and reporting program,
- the conversion of historic data in impis to access database, and
- the production of reports for two years (2001 and 2002)

The development and implementation of the EMIS system is quite involved and needs a lead time of two years. To achieve high levels of efficiency the training of personnel at higher technical levels needs to be put in place in order to enhance the implementation and sustainability of the program. The implementation strategies and overall management of the program, and reporting mechanism were comprehensive and this helped to keep the program on course. It was flexible enough to enhance the management and implementation process. Delays in one component of the program were identified and remedial action taken, while other activities continued. Notwithstanding that the project started later than planned, it has managed to keep pace with the implementation plan. In fact most of the activities planned have been completed either on or ahead of time.

The District Education Officers (DEOs), who were being trained, indicated that the program has had a positive impact. They were pleased with the delivery of the 2003 questionnaires in good time because schools will have ample time to compile and submit the questionnaires on time. They indicated that there was a change of attitude towards statistics and computers among themselves, heads and other producers and users of information. They felt empowered by the course and indicated that they were now comfortable with the whole process of data collection, processing and use. They even indicated ways and means of strengthening the process of data collection by creating awareness among school teachers and head teachers in order to get accurate and reliable data from schools. They also pointed out that the training of trainers approach was an effective method that should be employed to reach more people at the school and district levels.

The training programs should take into account the restructuring program and select the participants carefully. Training priority should begin with those who are likely to remain in the system longer. For purposes of sustainability, it is also necessary to develop personnel capacity through long term and higher technical training. A well trained cadre needs to be in place in order to facilitate a smooth transition when the program comes to an end. It was

noted however, that some of the training of personnel may be delayed because some of the staff members in the planning division have just been appointed and they are still finding their feet and settling down.

The provision of adequate levels of material, human and financial resources beyond the contract period will ensure and enhance the sustainability of the program in the long run.

## **RECOMMENDATIONS**

- This program should be taken to scale so that the rest of the provinces and districts can benefit from what is being done so far as in the two provinces and districts under the pilot program. Moreover, more comprehensive, complete, timely and accurate information is needed for planning and decision making purposes for the whole ministry. The capacity building and infrastructure fulfillment for the remaining provinces will contribute towards strengthening and effectiveness of the undertakings.
- Training of EMIS personnel is vital for building a sustainable system from school level to the ministry level following up the administrative tiers. This is a huge undertaking. The training should cover various areas, from awareness creation to core long term intensive professional training. The EMIS center of the ministry needs to prepare trainers in core common computing to train others in the provincial offices as well as the center. The center will have to develop a methodology of training members of the central EMIS who can train the provincial offices. These can in turn train the district offices who will in turn train the school personnel.
- The school data collection instrument is too large. There are some data elements that do not need to be collected on yearly basis. Some data elements will have to be collected through periodic survey or obtained from reliable secondary sources. This can be done when the instrument is reviewed after two or three years of implementation period.
- It is better to have external technical assistance based here in the project site than depending on correspondence through email.
- Establish relations with EMIS units in other countries and organizations that are engaged in similar activities of building education management information systems and promotion of information services for experience exchange and learning from one another.

- Investigate ways of purchasing hardware and software from within the country or neighboring countries so as to lower costs and getting the activity done faster.
- There is a need to provide adequate budgetary resources to ensure the sustainability and effectiveness of the program.
- It is almost impossible for EMIS to collect all information needed for the ministry. Identify and use information from secondary sources and include it in standard reports such as: Annual statistical abstract, indicators' report, and other relevant reports for use by all clients (Examples are examination results, assessment reports and other research reports etc.
- Promote the use of information at all levels especially the school - the source of education information by giving awareness training, giving feedback on their own data processed and analyzed (eg. Performance data by school, districts, and provinces). Promote the use of information at school, district, and provincial level for planning, monitoring and review purposes. It is also important to relate school performance to economic growth or performance, climatic conditions, administrative regions, etc.
- Collaborate with other users so that there are no overlaps in data collection and processing, and use of information. - e.g. the EBS questionnaire can be incorporated in the community school questionnaire
- Develop of dissemination strategies by identifying users. Prepare list of users, collect feedback and incorporate into future outputs.
- Revive the School Management Records Management System that enables the schools not only to compile and use basic data, but also to make the source information ready to fill the annual data collection questionnaire.
- Develop the culture of using data for planning purposes at all levels including the school. These include
  - Building capacity in the school system to enhance quality of data at source
  - Awareness of how information is used in management and policy/decision making
  - Reaching all levels of education from, school, district, and province to national level including all other interest groups.
- Work closely with the planning directorate of the ministry and ensure that the efforts made in reviving the information system in the ministry is closely linked to the overall policy objectives of the ministry of education.

- Incorporate an in-built mechanism of monitoring activities and periodic evaluation of the activities as a way of assessing the progress and feedback from users that will enable the enhancement of future undertakings.
- Directorate of planning and information has a research wing that can conduct research. There will always be a need for specialized qualitative data which cannot be captured quantitatively. The planning directorate needs to utilize the research unit to undertake this function.

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## Appendix 1: Terms of Reference

### Mid-term Assessment of USAID's Support for Zambia's Education Management Information System and Related Activities

#### Background

In 1999, Zambia's Ministry of Education (MOE) launched its sector reform program, the Basic Education Sub-Sector Investment Programme (BESSIP). BESSIP's primary objectives are to increase enrollment rates and improve learning achievement at the primary school level. These objectives will be attained through enhancing on-going programs and developing new ones. BESSIP is financed through a partnership of government and external financing agencies for an estimated total of \$840 million for the 1999-2006 period.

USAID/Zambia Country Strategic Plan's second strategic objective, *improved quality of basic education for more school-aged children*, supports BESSIP's objectives. USAID/Zambia defines "quality basic education" as "improved access, retention and achievement." Improved access means more school age children, girls and boys, rural and urban, receiving basic education. Improved retention means more pupils continuing and completing primary schooling (grade 1-7). Improved achievement means more pupils learning basic skills and competencies.

In conjunction with this strategic objective, USAID has a related intermediate result, namely "improved information for education decision-making processes." USAID measures achievement of this result through two indicators: (1) production of an annual school census statistical report, on time and (2) number of administrative units producing periodic reports. To address this intended result, USAID supports Zambia's Education Management Information System (EMIS) through a two-year technical-services contract with the American Institutes for Research (AIR) and its subcontractor, the Academy for Educational Development. This contract began in December 2001 and is scheduled to end in November 2003.

The main objective of the Zambian EMIS is to improve capabilities of the MOE to collect, organize, process, store, share, and disseminate education information for informed planning and management of education at all levels. A related objective is to establish an EMIS platform that provides the MOE at all levels with access to that information and to establish and enable the MOE to use simulations and modeling systems, based on real, current EMIS data, to plan and to project needs and resource requirements within the MOE, based on various best/worst-case scenarios of the future. Furthermore, AIR is tasked to collaborate with the Ministry of Education and the Examinations Council of Zambia to enhance Zambia's assessment of learning outcomes through its initiative on competency testing.

AIR is addressing four primary tasks. First, AIR is providing technical assistance to the MOE to develop, pilot, improve, and implement an education management information system at the national level and selected districts in Southern and Eastern Provinces and to

develop and implement a plan enabling the MOE to collect, analyze, manage, and use timely education information to make education decisions at all levels of the education system, including headquarters, provincial, district, school and community levels throughout Zambia.

In accordance with the terms of its contract with USAID, AIR is expected to develop, pilot test, revise, and implement an EMIS at MOE Headquarters level and in up to one province and four districts. By the end of the second year, AIR is supposed to have the EMIS operating in at least two provincial office levels and 19 districts offices. In addition, AIR is supposed to establish within the MOE a functioning simulation and modeling system with which planners can identify future resource needs, based on current data and various best-case/worst-case scenarios.

Second, the contract requires AIR to improve the MOE's and others' capacities to collect, share, analyze, disseminate, and use information at all levels of the educational system to make good educational decisions. As part of the second task, AIR will provide improved information technology (computers, internet hookups, etc.) as required by the EMIS decentralization strategy in the Southern and Eastern provinces where such do not exist. Decisions about which equipment to purchase will be based on a needs assessment to determine precise hardware and software specifications and needs required to support installation and operation of the EMIS in a phased manner and to ensure maintenance and service support for a minimum number of years.

As a further contribution to capacity building, AIR is required to conduct a training needs analysis, to assure its compatibility with and/or integration into the MOE overall planning for human resources development, and to provide the necessary support to ensure that capacity to use EMIS and to make decisions based on EMIS-generated information at all levels is developed. The needs analysis is intended to identify staffing and skill requirements in view of the new EMIS, a greater understanding among all levels of personnel of the kinds of information they need to make good decisions, and hardware/software to be used, and includes recommendations for institutionalizing information management functions at all levels, but especially at the district levels. AIR and its subcontractor will then initiate a training program that is responsive to the needs identified.

As a complement to the information gathered and processed via EMIS, AIR will provide technical assistance in the development of MOE or partner capacity to design, supervise, conduct, and/or disseminate educational research, especially regarding the **information gaps that the MOE has identified**. This research will be based on discussions and plans made with the MOE to provide better information for making better policy and planning decisions, especially relating to interactive radio learning centers, school health and nutrition, community participation, quality of learning, monitoring and evaluation systems, the mitigation of HIV/AIDS on education, education access and equity issues of girls, orphans, out-of-school, and other vulnerable children, and multisectoral approaches to the HIV/AIDS pandemic.

Third, the contract requires AIR to **collaborate with MOE's headquarters**, provincial and district education offices, and relevant partners working in Southern and Eastern Provinces **to develop** and/or refine community-based models for collecting and utilizing MOE and/or community school data so that such data are harmonized with and, where indicated, included in the EMIS.



Fourth, the contract requires AIR to “**collaborate closely with the Examinations Council and relevant units of the MOE in developing and implementing a training plan** that will enhance the capacity of Examinations Council personnel in competency test development, implementation, and use.”

### *Statement of Work*

The Association for Development of Education in Africa (ADEA) will take the lead in completing a mid-term, formative assessment of the success and progress of AIR’s support for the Zambia EMIS. In completing this task, ADEA shall:

- Propose a team leader and one other team member; the candidates proposed, preferably from southern Africa, should have prior experience with education statistics and their collection, management, use, and reporting;
- Provide the résumés of the proposed candidates to USAID/Zambia and to AIR; USAID/Zambia shall approve the proposed team members;
- Work with two Zambian team members, including one from the MOE, to be selected in consultation with USAID/Zambia and the Ministry of Education;
- Meet with representatives of the MOE, USAID/Zambia, and AIR in Lusaka over a five-day period to discuss AIR’s program-related efforts and these representatives’ assessment of the program;
- Review program documentation, including relevant portions of AIR’s contract with USAID and AIR’s periodic progress reports submitted to USAID;
- Provide a draft written assessment of the EMIS program and its related activities to AIR and USAID no later than February 11, 2003. The assessment process shall also include an oral presentation to and discussion of preliminary results with USAID and the Ministry of Education before the team’s departure from Zambia.
- Revise, as necessary, the draft written assessment in response to comments from USAID, the MOE, and AIR.
- Submit a final written assessment to USAID and AIR no later than February 21, 2003. This assessment shall draw conclusions based solely on the data collected and, shall, if applicable, direct all recommendations for change to either USAID/Zambia or to AIR. The final report shall be objective and shall be based on a comparison of anticipated results with accomplishments or progress toward these results. The MOE shall *not* be the subject of the assessment but will be given the opportunity to review and comment on the draft assessment. USAID, AIR, and the MOE shall receive a copy of the final report.

The assessment must address the following major questions and may address other questions that it deems to be of interest or importance:

- What progress and accomplishments can be attributed to the program’s efforts to date?
- How and how well will continued implementation during the program’s second year contribute to achievement of desired outcomes?
- What are the program’s strengths and weaknesses?
- How can the program be strengthened?
- Are the program’s goals and objectives suitable and achievable within the period of the contract?

- Are there new or additional activities or tasks that could usefully contribute to the strengthening and enhancement of the EMIS and the efforts of the Examinations Council of Zambia over the next three to five years?

The intended outcome is a fair, objective, and independent appraisal of AIR's progress to date and recommendations about how AIR's efforts can be improved.

**Appendix 2: Summary achievement of activities planned for year one**

|    | <b>A. Year ONE</b>   | <b>X or √</b> | <b>Remarks</b>   |
|----|--|---------------|--|
| 1  | Conducting an EMIS Needs Assessment including resource requirements  | √             |  |
| 2  | Importing data and creating reports from backlog of data.  | √             | Why not to be completed?   |
| 3  | Providing ED*ASSIST Orientation Training EMIS for Decision Making  | √             | Why only 6 geographic levels?  |
| 4  | Modifying or redesigning Annual School Census questionnaire  | √             |  |
| 5  | Determining the data to be included in Output Reports and modifying their formats and reporting sequence accordingly   | √             | Complete output??  |
| 6  | Developing Input Programs  |               | Data capture screens. This is something that goes on all the time parallel screens will have to be designed, especially when the instrument is modified. Query for abstract??? |
| 7  | Training relevant personnel on Data Capture software, Questionnaire Tracking System (QTS), and Questionnaire Distribution techniques of the ED*ASSIST Process component. | √             |  |
| 8  | Providing advanced Technical Training  | X             |  |
| 9  | Completing its information Organization/Cleaning.  | √             |  |
| 10 | Producing Output Reports, EMIS Products  | √             |  |
| 11 | Providing Policy/Managerial Level Training   | X             | Scheduled for '03  |
| 12 | Adjusting the ED*ASSIST Inputs/Process/Outputs, based on the Policy/Managerial training and other Ministerial inputs.  | X             | Partly done. Modification  |
| 13 | Preparing and implementing Decentralization of EMIS functions  | √             | There are some steps taken but the long hardles of equipping provinces and districts if planned for '03  |
| 14 | The Contractor will administrate activities both professional and clerical that meet USAID requirements.   | √             |  |
| 15 | The Contractor will procure in hardware/software required for the EMIS.  | √             | is the inventory comepleted?   |
| 16 | Simulation models  | X             | There is a plan in place to engage the project.  |

### Appendix 3: The six Dakar Goals

We hereby collectively **commit ourselves** to the attainment of the following goals:

- (i) Expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children;
- (ii) Ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality;
- (iii) Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programs;
- (iv) Achieving a 50 per cent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults;
- (v) Eliminating gender disparities in primary and secondary education by 2015, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality;
- (vi) Improving all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills.

### Appendix 4: LIST OF INTERVIEWEES

|  |                |                    |
|--|----------------|--------------------|
| Drake Warrick  | Chief of party | AIR representative |
| Edward Graybill  | – CHANGES      | Director Changes   |
| Education Management Information Systems – EMIS Zambia |                |                    |
| George Caldwell - AED                                  |                |                    |
| Cain Kalala  |                |                    |
| Bupe Musonda   |                |                    |
| Beatrice Mugwagwa                                      |                |                    |
| Charles Ndakala  |                |                    |
| Examination Council of Zambia                          |                |                    |
| C. T. Sakala – ECZ                                     |                |                    |
| Mrs Teza Musakanya - ECZ                               |                |                    |
| Angel Kalimina - ECZ                                   |                |                    |
| William Kapambwe - ECZ                                 |                |                    |
| Victor Vas Quez -EBS                                   |                |                    |
| Educational Broadcasting Services                      |                |                    |

Mrs Mubashi - EBS

Simon Richmond – EBS

USAID

Kent Noel – USAID

Winnie Chilala – USAID

Director of planning

Dr. Lawrence Musonda

## **19** District Education Officers

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